STATE OF NORTH CAROLINA

OFFICE OF STATE PERSONNEL

POSITION DESCRIPTION FORM (PD-102R-92)

Approved Classification: _____

Effective Date: _____

Analyst: _____

(This Space for Personnel Dept. Use Only)

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| 1. Present Classification Title of Position<br>Transportation Technician IV | 7. Pres. 15 Digit Position No. Prop. 15 Digit Pos. No. |
| 2. Usual Working Title of Position<br>Technical Support Technician | 8. Department, University, Commission, or Agency<br>Transportation |
| 3. Requested Classification of Position<br>Transportation Technician VI | 9. Institution & Division<br>Highways |
| 4. Name of Immediate Supervisor | 10. Section and Unit<br>Location & Surveys |
| 5. Supervisor's Position Title & Position Number<br>Transportation Engineering Supervisor I 00952 | 11. Street Address, City and County<br>1020 Birch Ridge Rd., Raleigh, NC |
| 6. Name of Employee | 12. Location of Workplace, Bldg. And Room No.<br>Century Center, Bldg. B |

I. A. Primary Purpose of Organizational Unit:

The primary purpose of Location & Surveys is to serve as support services in providing engineering analysis, mapping and other data for the design of transportation facilities and the acquisition of property for the construction of transportation facilities.

B. Primary Purpose of Position:

This is the highest level of technical support in the Unit, performing a wide variety of the most complex and advanced assignments including analyzing, evaluating, computing, editing, and processing higher level engineering and other survey information. This includes but is not limited to reviewing computer aided design/drafting (CADD) mapping by others using various types of CADD software, to ensure statewide consistency in procedures and precision. This position evaluates new engineering/survey CADD/computer hardware and software primarily and assists others in evaluation of survey equipment. This would also include training other technicians in use of CADD survey and design software and hardware to be used by the Unit in daily operations. This includes but is not limited to establishing (includes planning, processing, and adjustment) and reviewing establishment of project control networks utilizing GPS and/or conventional survey methods, to ensure statewide consistency in procedures and precision. This position evaluates new engineering/survey computer hardware and software and survey equipment used in survey field operations. This would also include training other technicians in use of survey software (data collection, GPS, etc.) and hardware (theodolites, data collectors, GPS, etc.) to be used by the Unit in daily field operations. Work involves an extremely wide range of independent decision-making and use of judgment, and would normally include some supervision and providing work direction to others. Work includes responsibility of developing and maintaining training, establishing certain procedures. Hardware/software evaluation requires involvement and supervision of others in data collection and project development.

C. Work Schedule:

8:00 AM to 5:00 PM, or some variation thereof, Monday through Friday, for a total of 40 hours per work week. Flex time or seasonally variable work hours may be used in individual offices based upon needs and circumstances.

D. Change in Responsibilities or Organizational Relationship:

This is a new position created to provide for a higher level of technical support in the Unit. Introduction of Global Positioning System (GPS), Subsurface Utility Engineering (SUE), increased utilization of private engineering firms (PEF), integration of digital-based data, increased use of the NC State Plane Coordinate network, and increased involvement in the legal aspects of right of way acquisition have created an expanded and more complex involvement for the Unit in the collection, interpretation, preparation, and review of high-level technical information. Creation of this level of technical position allows for improved quality control in reviewing data from statewide sources, reviewing and evaluating computer and survey hardware and software, and procedures documentation and training.

II. A. DESCRIPTION OF RESPONSIBILITIES AND DUTIES: Method Used (Check One) Order of importance____
Sequential order_____

Place an asterisk (*) next to each essential function. (See instructions for complete explanation.) Please note percentage of time for each function.

No. %

1 40 **Data Review/Transmittal** - This includes checking CADD and GPS data from different sources (in-house or private engineering firms)for thoroughness and proper format, completeness and thoroughness of surveys to meet Unit-wide standards and providing a final quality control check for the Unit. Duties include evaluation of CADD mapping by others to ensure proper procedures are followed, to ensure that proper symbology, lines weights, etc. are used in mapping, in order to provide for common format to others using data in other Units, Branches, etc. as required. Transmits CADD mapping to proper receiving agents as requested, including archiving of data as needed. Serves as support person to other Units in locating archived data from Location & Surveys. Duties include evaluation of GPS networks by others to ensure proper procedures are followed, to ensure that network adjustments meet Unit and professional specifications, and to ensure that networks established include necessary information for others to use at a later time. Transmits GPS data to proper receiving agents in NCDOT as requested, including archiving of data as needed. Transmits data to North Carolina Geodetic Surveys for statewide publication. Serves as part of team providing support to Unit and other Units, Branches, etc., in data interpretation and other information regarding what was gathered, how, and why.

2 25 **Unit Support: Training/Documentation** - This position has primary responsibility for training Unit and other NCDOT personnel in operation of new or existing CADD, GPS, or other types of survey/design software. Investigates and gathers background data for making procedural changes, and writes support documentation for procedures established by the Unit. Provides additional support in training and document creation for other members of Project Data/Support group as needed.

3 20 **Unit Support: Hardware/Software Evaluation and Maintenance** - Evaluates and assists others in evaluate new survey hardware/software equipment for Unit, including CADD, GPS, theodolites, data collectors, and specialty items as required or requested. This includes leading survey teams in all aspects of route location surveys, in order to fully test all aspects of CADD, GPS or other hardware/software in providing all necessary applications for project development. This includes evaluating mapping procedures in performance of regular tasks associated with route location or other surveys as required by Unit. Maintains CADD feature symbology files software (STDLS), and other CADD program coding necessary for standard procedures in Unit (and other NCDOT users), adding new features as required for mapping needs. This includes evaluating new field procedures in performance of regular tasks associated with route location or other surveys as required by Unit. Maintains GPS and TDS feature codes for data collection software, and any other program coding for survey equipment necessary for standard procedures in Unit (and other NCDOT users), adding new features as required for mapping needs. This position will investigate, provide feedback and suggestions to Unit management regarding purchases of new types of survey hardware/software for Unit operations.

4 10 **Special Projects/Other** - Survey, mapping, or other activities as required by supervisor or Unit management. These may consist of survey or mapping projects that require special or surveys with time restrictions which could severely impact a field office's planned work schedule. This position would serve as team leader or team member with other TT VI's in PDS group, in order to evaluate needs and establish normal procedures for special or new types of surveys and how those surveys would impact normal field office survey activities. This position will provide research for technical papers or answers from Department or other requests concerning technical aspects of Unit operations.

5 05 **Database Maintenance** - Maintains CADD database of project centerlines and rights of way, wetlands, and other properties surveyed by Unit for NCDOT, and database of GPS control points established by L&S field personnel.

II. B. OTHER POSITION CHARACTERISTICS: (con't)

1. Accuracy Required in Work:

Engineering and surveying measurements and calculations necessary to millimeter reporting is required. A thorough knowledge of necessary data and proper format is needed. A thorough knowledge of the legal and technical aspects of route location, geodetic surveys, boundary surveys, and others as listed above.

2. Consequence of Error:

Project delays and increased costs in Preconstruction project development and during construction can result from poor execution of the duties of this position. Inaccurate procedures and/or failure to follow established guidelines and procedures can result in erroneous data being conveyed to others for use in design or property acquisition, requiring resurveys and redesign causing project delays and cost overruns. Poor understanding of legal and/or technical aspects can result in additional costs for litigation or further costs in proper establishment of boundaries. Poor control network establishment can result in complications in design and construction of adjoining projects. Poor communication and training skills or procedures could result in improper procedures being established throughout the Unit, resulting in continuous bad data. Poor quality review could result in erroneous data being transmitted on, causing bad design or costly reworking of information.

3. Instructions Provided to Employee:

Position requirements include sufficient experience and knowledge to enable the employee to perform the duties of this position. Goals are defined and procedural guidelines are established. Deadlines are established when applicable. It is usually up to the employee to ensure completion of tasks in a timely and accurate manner, and to determine the best method to resolve issues, provide and present data, or prepare for the assigned task. Instructions may be either oral or written and may be general or specific in nature, according to the type and scope of work.

4. Guides, Regulations, Policies and References Used by Employee:

NCDOT Highway Design Manual; AASHTO Geometric Design Policy; CADD, GPS, and other computer references and manuals; General Statutes of North Carolina as related to Highways; NCDOT Personnel Manual; NCDOT Field Fiscal Procedures Manual; NCDOT Workplace Safety Manual; NCDOT and FHWA Manuals on Uniform Traffic Control Devices (MUTCD); Legal Principles of Boundary Surveying and other legal texts on surveying; various engineering and surveying texts including cadastral, geodesy, and route location; general practices, principles, procedures, and ethics of professional engineering and surveying as described by the NC State Board of Registration for Professional Engineers and Registered Land Surveyors; dictionary.

5. Supervision Received by Employee:

This employee is under the supervision of the Group Leader. Very little daily instruction or supervision is provided on 90% of the duties of the position. Technical problems are either resolved at this level or referred to supervisors for involvement and resolution. Tasks and duties may be reviewed during and after completion, but due to the independent operation of this position, specific activities that lead to task accomplishment are not often reviewed. Personnel matters are reviewed with immediate supervisor as needed. Training procedures are reviewed by supervisor and others prior to implementation.

6. Variety and Purpose of Personal Contacts:

Personal contact is with the Location & Surveys personnel at all levels, staff of other Units, Divisions, or Branches of NCDOT, representatives of private engineering firms that may be doing work for this Unit, County Manager's or Register of Deed staff working in tax offices, municipal engineering units, and utility representatives, and general public. Contact with property owners will be required on special projects or as required by the Group Leader. Contact with survey/computer/CADD equipment vendors will be common, for evaluation and information.

7. Physical Effort:

Physical labor involves both office and field work. Outside work may occur in any type of geographic conditions, at any time of day. Some physical labor such as traversing rough terrain, chopping bushes, or carrying heavy or cumbersome equipment may be required at times. Travel to different areas of the state will be required for some tasks.

8. Work Environment and Conditions:

Work is 80% indoors, in a controlled environment; 20% of work requires field visits or activities in project development and review. Outside work is subject to any type of weather conditions and may involve periods of time in adverse conditions. This employee may be exposed to high volumes of traffic, animals, insects, snakes, and poisonous plants. Employee may also be required to confront irate citizens.

9. Machines, Tools, Instruments, Equipment and Materials Used:

A working knowledge of computers; CADD workstations; hand-held calculators; triangles, scales, and other hand-drafting or measuring equipment; manuals; large photographs and plan sheets; telephone. A working knowledge of the operation of survey equipment such as plumb bobs, electronic theodolites, GPS receivers, tripods, bush axes, and others is required. Operation of motor vehicles is required.

10. Visual Attention, Mental Concentration and Manipulative Skills:

Computer/calculator operation, writing memos, and compiling reports require keypunch and writing abilities. Mental concentration is required to plan and coordinate survey activities, review data, solve surveying and engineering problems, and work with others in problem solving. Visual as well as mental attention and ability is required in reviewing data and project evaluation.

11. Safety for Others:

This position is responsible for the training of Unit or other NCDOT field and office personnel in proper field and equipment safety. This position is responsible for the initial evaluation of survey procedures and equipment, ensuring that procedures and equipment operation are safe and will not place users in dangerous situations during survey activities.

12. Dynamics of Work:

Engineering and design standards are often revised. Methods, procedures, and equipment used for collecting route location and other survey data, including survey equipment and computer hardware and software, are always being revised, upgraded, or improved. These changes require a continuous upgrading and maintenance of knowledge of the engineering and surveying professions.

III. KNOWLEDGES, SKILLS & ABILITIES AND TRAINING & EXPERIENCE REQUIREMENTS:

A. Knowledges, Skills and Abilities:

Thorough knowledge of procedures, methods and equipment used in performing engineering and other surveys. Thorough knowledge of mathematical applications, including algebra, geometry, and trigonometry. Skilled in CADD, skilled in the use of survey instruments, including GPS receivers, data collectors, and skilled in the use of office equipment such as calculators and computers. Ability to read, interpret and explain such things as construction plans, court records, title records, technical and procedural manuals. Ability to plan, direct, supervise, train, and evaluate the work of lower level technicians; ability to understand and follow written or oral instruction, communicate with the general public and other non-technical groups; take notes and prepare or review reports. Ability to review and evaluate the work of others. Ability to establish training classes to be taught by self and others in use of highly technical equipment and survey procedures.

B. 1. Required Minimum Training:

Graduation from a two year technical college with a degree in Civil Engineering or Survey Technology and seven years of progressive transportation experience.

2. Additional Training/Experience:

Additional training as needed will be supplied by supervisor and Location & Surveys Unit or NCDOT Training Personnel.

3. Equivalent Training and Experience:

Graduation from high school and nine years of progressive transportation technician experience; or an equivalent combination of training and related experience. In lieu of a civil engineering degree (BS or AS), successful completion of the ITRE Highway Engineering Concepts Course will be required.

C. License or Certification Required by Statute or Regulation:

NC Driver's License is required.
North Carolina Registered Land Surveyor preferred
Highway Engineering Concepts Course Required

IV. CERTIFICATION: Signatures indicate agreement with all information provided, including designation of essential functions.

Supervisor's Certification: I certify that (a) I am the Immediate Supervisor of this position, that (b) I have provided a complete and accurate description of responsibilities and duties and (c) I have verified (and reconciled as needed) its accuracy and completeness with the employee.

Signature _____ Title: _____ Date: _____

Employee's Certification: I certify that I have reviewed this position description and that it is a complete and accurate description of my responsibilities and duties.

Signature _____ Title: _____ Date: _____

Section or Division Manager's Certification: I certify that this position description, completed by the above named immediate supervisor, is complete and accurate.

Signature _____ Title: _____ Date: _____

Department Head or Authorized Representative's Certification: I certify that this is an authorized, official position description of the subject position.

Signature _____ Title: _____ Date: _____